inside thereof. Each slot extends from the radial inside to a root portion nearest to a radial outside of each segmental lamination, with the portion of each segmental lamination remaining between the root portion and the radial outside defining a yoke height. Each of the segmental laminations is further provided on its radial outside with periodically distributed notches which extend inwardly toward the radial inside. These notches are filled only with atmosphere that surrounds the stator body and are also all of equal dimensions including a notch depth that is much less than yoke height, with the number and depth of the notches being selected to increase mechanical strength by reducing vibration amplitudes during operation by reducing the resonate frequency below the rotational excitation frequency. Note page 2, lines 30-38 and page 4, lines 20-23 of the specification, for example.

Turning to the outstanding rejection, the Action states that Hershberger discloses a laminated stator body for an electrical machine that is made up of a multiplicity of segmental laminations that each have slots formed on a radial inside portion which slots will accommodate conductors for a stator winding. The Action further notes that each of these segmental laminations is further provided on its radial outside with periodically distributed notches with each notch in each adjacent segmental lamination being arranged in alignment with one another. The Action further suggests that each notch is taught to end in a relief opening at its radial inner end with apparent regard to the slight widening of notch ends shown as 34 of Hershberger and also states that the notches are disclosed to have a width of between 0.5 mm and 1 mm at col. 4, lines 66-71 of Hershberger. The Action further notes that Hershberger only discloses that the notches are to be filled with something besides the surrounding atmosphere for the stator body and looks to Sacher as teaching atmosphere filled notches as well as the notch-slot relationships set forth by Claims 3 and 5, for example.

Applicants note that Hershberger is concerned with a stator for a single-phase induction electric motor. It is in such a machine that Hershberger suggests that at least two different coil groups are disposed in the slots with these coils arranged symmetrically about an axis to form a corresponding number of magnetic poles. Note col. 2, lines 44-49 of Hershberger. Hershberger also teaches that the stator yoke section at each pole will include magnetic restriction means which is clearly disclosed to be the elongated slot that must extend transversely across the yoke section "in association with a preselected coil accommodating slot spaced at a predetermined electric angle θ from each coil group axis in the rotational direction of the revolvable member." See col. 2, lines 50-55. The purpose is further disclosed to be to provide a high reluctance in the magnetic path of the quadrature axis flux to effect a phase shift in the flux components during starting conditions. See col. 2, lines 59-62 of Hershberger.

It is with consideration of this background that Hershberger suggests that slots 32 are to be provided so that the innermost portion 34 terminates adjacent to the center of a preselected slot. In addition, col. 5, lines 1-6 of Hershberger indicate that the enlargement of the end 34 is so that the very small magnetic bridge 37 that remains between each slot and each notch can be rapidly saturated while col. 5, lines 15-26 teach the filling of the notches with bonding material 38 to correct the weakness created by the slots that extend from the radial outside to almost the slots 17a themselves that leaves only the narrow magnetic bridge 37.

Accordingly, besides the fact that the attaining of desired rigidity characteristics for the core requires the bonding material 38 to be formed in the slots 32 after the laminations have been aligned, as disclosed at col. 5, lines 20-26 as noted above, it is clear that the slots

must extend almost into engagement with the coil slots 17a. Consequently, it would be clearly impossible to meet the design and operation goals of Hershberger without the provision of this bonding material 38 in each transverse notch 32 that extends almost into engagement with the winding slots 17a so as to leave at most a very narrow bridge portion 37 between the notches 32 and the slots 17a, all to improve starting performance as further noted at col. 5 lines 27-52 of Hershberger.

The embodiment of Figure 6 of Hershberger goes even further and requires the notches 32 to extend "entirely across the yoke section in direct communication with the preselected coil slot 17a" and the use of bonding material 38 is clearly still required for strengthening the weakened core. See col. 7, lines 25-29 of Hershberger.

The outstanding Office Action relies upon teachings found in Sacher and argues that these teachings would be applied to the notches 32 of Hershberger to interrupt direct connection between adjacent main poles. The Action, however, ignores that the notches 32 of Hershberger are for an entirely different purpose in an entirely different machine relative to the notches such as 13 of Sacher that are provided in the stator of a DC machine to mechanically decouple poles. Moreover, the Action ignores that replacing the bonding material 38 of Hershberger with air would defeat the purpose of Hershberger to strengthen a stator core greatly weakened by the transverse notches 32 that either almost extend to the particular slots 17a or that actually fully extend to such slots.

In this regard, it is clear that Sacher is concerned with a DC machine, not the single-phase induction electric motor of Hershberger. See the title of Sacher and that of Hershberger, for example. Moreover, Hershberger is concerned with transverse notches 32 that extend almost or fully to particular slots where the particular slots and the notches have a

particular angular arrangement to provide satisfactory starting and running performance for a single-phase induction motor while Sacher is concerned with avoiding magnetic harmonic waves (fifth harmonic and higher) relative to core vibrations and thus tunes core frequencies using notches such as 13 that lie at a pole center. Not only are the purposes for providing the notches different in these references, the arrangement of notches is also different because Hershberger arranges the notches 32 angularly displaced as to pole zones as disclosed at col. 5, lines 27-52 while Sacher arranges each of his notches at the center of a pole to avoid any interference with main flux while mechanically decoupling the poles from each other. About the only thing in common between the two references is that each stator body is made up of sheets of metal laminations which have cutouts that are aligned to form notches and other cutouts aligned to form slots for windings.

Furthermore, while Sacher has well defined pole areas 5 and outside yoke areas 4 no such well defined areas exist in Hershberger. Moreover, to whatever extent Sacher is concerned with interrupting the physical direct connection between yoke portions 4 and pole portions 5, this would not be translated to the stator of the single-phase induction machine of Hershberger as no corresponding well defined separate stator yoke and pole portions exist. Accordingly, and contrary to what is stated in the Office Action, the purpose of Sacher as to mechanically interrupting a direct connection between a stator yoke and a main pole and between adjacent main poles would have no corresponding purpose in the stator of the single-phase induction electric motor of Hershberger.

Moreover, for the artisan to adopt the air filled notches of the DC machine of Sacher and to apply these to the entirely different single-phase induction electric motor of Hershberger, he would have had to have redesigned the Hershberger single-phase induction

electric motor stator so that it had notch modifications that no longer would permit notches 32 to perform as intended. Such a reconstruction is prohibited as noted in MPEP §2143.02 (Rev. 1, Feb. 2000) at page 2100-99 under the heading "THE PROPOSED MODIFICATION CANNOT RENDER THE PRIOR ART UNSATISFACTORY FOR ITS INTENDED PURPOSE". The paragraph under this heading further discusses the case of In re Gordon, 221 USPQ 1125 (Fed. Cir. 1984) as prohibiting such modifications. Note also the heading "THE PROPOSED MODIFICATION CANNOT CHANGE THE PRINCIPLE OF OPERATION OF A REFERENCE" appearing in column 2 on page 2100-99 and the discussion of the case In re Ratti, 123 USPQ 349, 352 (CCPA 1959) that notes that "suggested combination of references [that] would require a substantial reconstruction and redesign of the element shown in [the primary reference] as well as a change in the basic principle under which the [primary reference] construction was designed to operate" was impermissible.

In any event, it is clear that neither Hershberger nor Sacher include any teachings that the yoke height is to be greater than the depth of the notch, much less that “the number and depth of the notches” is to be “selected to increase mechanical strength by reducing vibration amplitudes during operation.” In this regard, the rejection (at page 3, last full paragraph) indicated an unsubstantiated belief that the artisan would find it somehow obvious to experiment with notch depth in order to optimize the same, even though the optimization would be for resonance characteristics not taught by either applied reference. However, it is well established that before the optimization of a result effective variable can be said to be obvious, the prior art must teach that changing the variable of concern would effect the particular result that it is being said is obvious to optimize. See In re Antonie, 195 USPQ 6

(CCPA 1977) requiring that the prior art must recognize the parameter to be optimized before optimization of that parameter can be characterized as obvious. Here, not only does the prior art not teach or suggest the particular 20% and 40% yoke height limitations of the dependent claims, it also does not teach or suggest that the number and depth of notches could be expected to increase mechanical strength by reducing vibration amplitudes during machine operation, much less the Claim 1 relationship between notch depth and yoke height..

In this last regard, it is again noted that the notches 32 of <u>Hershberger</u> are intended to be almost in direct contact with the upper part of each particular winding slot 17a and there are no teachings or suggestions as to the "number and depth of the notches being selected to increase mechanical strength by reducing vibration amplitudes during machine operation," or that the notches are to have "a notch depth that is much less than yoke height." Similarly, the depth of the notches of <u>Sacher</u> is clearly shown to be almost completely through the stator yoke portion so that it is at least as deep or nearly as deep as the yoke height above each of the slots of four windings which are on either side of the two poles having the notch cut out. Once again, there are no teachings or suggestions as to the Claim 1 required "number and depth of the notches being selected to increase mechanical strength by reducing vibration amplitudes during operation" or that the notches are to have "a notch depth that is much less than yoke height" to be found in <u>Sacher</u>.

Claims 2-15 all depend ultimately upon Claim 1 and, accordingly, are considered to define over the applied prior art for the same reasons that Claim 1 does. In addition, each of these dependent claims add additional features which are not taught or suggested by the applied references. For example, the <u>Hershberger</u> enlarged portion 34 at the end of notch 32

is not seen to be readable as a relief given the understanding of the skilled artisan that reliefs are rounded to prevent stress unlike the angular makeup of 34.

Moreover, and as noted above, each of Claims 4 and 6 require a specific notch depth relationship relative to yoke height. Again, the optimization argument in the outstanding rejection is not applicable since the prior art teaches no reason to expect that there is something to be gained by modifying yoke height in the manner claimed.

The requirement of Claim 1 as to all notches being of equal width considered with the requirement of Claims 3, 4 and 8 that the number of notches must be twice the number of slots is also believed to define over both of the applied references.

Since no further issues are believed to be outstanding in this application, it is respectfully submitted that this application is in condition for formal allowance and an early and favorable action to that effect is, therefore, respectfully requested.

Respectfully submitted,

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<u>IN THE CLAIMS</u>

Please amend the claims as follows:

--1. (Twice Amended) A laminated stator body for an electrical machine, which laminated stator body is composed of a multiplicity of segmental laminations, each segmental lamination being provided on [its] <u>a</u> radial inside with slots for accommodating conductors of a stator winding, <u>each slot extending from the radial inside to a root portion nearest to a radial outside of each segmental lamination, with the portion of each segmental lamination remaining between the root portion and the radial outside defining a yoke height,</u> wherein each segmental lamination is provided on [its] <u>the</u> radial outside with periodically distributed notches <u>all of equal dimensions including a notch depth that is much less than yoke height, with the number and depth of the notches being selected to increase mechanical strength by reducing vibration amplitudes during machine operation</u>, the notches <u>and slots</u> of actually adjacent segmental laminations in the laminated stator body being arranged in alignment with one another <u>to form said laminated stator body</u>, said notches being filled only with an atmosphere surrounding said <u>laminated</u> stator body.

4. (Twice Amended) The laminated stator body as claimed in claim 3, wherein the notch depth [K_T] is [in] <u>on</u> the order of magnitude of 20% of the yoke height [J_H].

6. (Twice Amended) The laminated stator body as claimed in claim 5, wherein the notch depth [K_T] is [in] <u>on</u> the order of magnitude of 40% of the yoke height [J_H].--.